No. 2

THE DISTRIBUTION OF STEEL CONSUMPTION, 1949–50

REPORT

OF THE

FEDERAL TRADE COMMISSION

TO THE

SUBCOMMITTEE ON MONOPOLY

OF THE

SELECT COMMITTEE ON SMALL BUSINESS
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INTRODUCTION

The economic problem with which this report is concerned may be briefly stated as follows: What happens to the distribution of a basic raw material during a period of shortage when control over its distribution is left largely in the hands of its producers? While perhaps best illustrated by the steel industry, the problem is common to all raw-material industries and is thus a matter of fundamental importance to the future structure of American industry.

In normal times a shortage in a competitive industry would tend to result in an increase in price and an expansion of capacity. However, in an industry such as steel, the expansion of capacity is necessarily a slow process; 2 or 3 years may elapse before new mills are built, heavy, costly, and complicated machinery is manufactured and installed, and new workers are trained. Thus the expansion of capacity, though the only remedy for a persistent shortage in the long run, constitutes no solution in the short run. In fact, by diverting materials from production to construction, the very process of expanding capacity may tend to aggravate the immediate shortage.

Where a shortage is due to war or threats of war, national catastrophes, flood, pestilence, or similar causes, governments naturally are reluctant to permit price increases. In the interest of equity and public morale, governments generally seek to prevent a relatively few persons from enriching themselves as the consequence of a national emergency. Hence, "ceilings" are placed on prices in order to check profiteering, to arrest increases in the cost of living, and to hold down the cost of items purchased by the government itself.

With the expansion of capacity a matter of the future, and "rationing by price" precluded as undesirable, some other form of rationing must be adopted. In this country, nonprice rationing has taken one of two forms. Under the first, a small proportion of the available supply is set aside for essential needs and the remainder is distributed at the discretion of the materials producers themselves. This form of allocation existed during the years immediately after World War II, culminating in 1947, and again during the period immediately following the invasion of South Korea. Under the second form, the Government itself assumes responsibility for distributing all or a large portion of the total supply, instituting some plan of allocation, such as the Controlled Materials Plan, under which materials are allocated for specific programs. This latter form of control was adopted on an all-out basis during World War II. During the present mobilization period it has again been instituted on a somewhat modified basis, beginning July 1, 1951. Data are not as yet available on the distribution of steel among fabricating industries under the new allocation plan.

But a few comparisons can be made between a period of relatively free supply and a shortage period in which control over distribution rested almost exclusively in the hands of the producers. Specifically, it is possible to compare the distribution of steel as between (*a*) the year 1949 and (*b*) the fourth quarter of 1950.[1] In 1949 steel had been in relatively free supply. The invasion of South Korea took place on June 25, 1950, and by the fourth quarter of that year demand for steel was far in excess of production. To some extent, at least, this mushrooming of demand reflected attempts of buyers to build up raw-material inventories before more stringent controls were adopted. Yet it was also due in part to an increase in actual steel consumption which rose over 30 percent during this period. Any modification in the flow of steel during this period can be attributed only in small part to its absorption in the defense effort. During the fourth quarter of 1950, less than 10 percent of the Nation's output of steel was actually going into military and directly related defense purposes.[2]

In recent months certain prominent members of the steel industry have urged that the Controlled Materials Plan be discarded, that a reserve for military and other essential purposes be set aside, and that the control over the remainder of the supply again be placed in the hands of the sellers.[3] The present report is indicative, in broad outline, of the pattern of distribution to be expected should such a course of action be followed.

Some indication of the probable pattern of distribution to be expected under steel company control also can be gained from another report, Changes in the Distribution of Steel, 1940–47, issued by the Senate Small Business Committee.[4] This report contrasts the distribution of steel in a prewar year of free supply with a postwar year of shortage when the control over distribution was left almost entirely in the hands of the producers. The latter year, following the end of OPA, was the period in which the so-called "black market" and "gray market" in steel made their appearance on a wide scale.

In its report, which covered 14 large steel companies representing 84.7 percent of the Nation's steel capacity, the committee examined four allegations which had been made by representatives of small business. Each of these allegations, together with the relevant findings of the report, is summarized below in the words of the report:

A. An alleged increase of steel shipments to the steel companies' own fabricating subsidiaries

* * * such an increase has indeed taken place; for the products surveyed, as a group, shipments to fabricating subsidiaries, as a percent of total shipments, rose from 7.5 percent in 1940 to 8.3 percent in 1947. The increase was much more pronounced in the case of those particular steel products which constitute the principal raw materials consumed by the fabricating companies that have been acquired—specifically, hot-rolled sheet, cold-rolled sheet, and hot-rolled strip. * * *. The amount of hot-rolled sheet—the "tightest" steel product and the

[1] Because of the limitations of the data, one of the comparisons—that involving shipments to affiliated versus independent warehouses—will be based on somewhat different time periods.

[2] The "set-aside" provided by NPA Order M–1, December 1, 1950, was equal to less than 9 percent of the carbon steel produced in the fourth quarter. The "set aside" that had been ordered October 26, 1950, accounted for a somewhat smaller tonnage.

[3] 82d Cong., 1st sess., hearings of the House Small Business Committee, Problems of Small Business and Controlled Materials Plan, passim. The report and recommendations submitted by the industry advisory committee on October 10, 1951, to Defense Mobilization Director, Charles E. Wilson, while stating that CMP is not needed, avoids any commitment on the over-all effectiveness of the plan. However, the bulk of the report is given over to criticism of the program, and proposals for reform. (See also testimony of a representative of Bethlehem Steel Corp. and a representative of the United States Steel Corp. before a subcommittee of the Senate Select Committee on Small Business, 82d Cong., 1st sess., December 3, 1951, especially pp. 22–23, 33.)

[4] 81st Cong., 1st sess., S. Rept. No. 44, 1949.

center of most of the complaints—going to fabricating subsidiaries rose from 310,000 tons in 1940 to 651,000 tons in 1947, a proportionate increase of from 5.7 to 10.5 percent.[5]

B. An alleged increase in steel shipments to the steel companies' own warehouses

* * * the proportion going to warehouses has also increased. * * * At the same time, however, the division of warehouse shipments between affiliated and independent warehouses has definitely shifted in favor of the former. For all products together, the proportion of shipments to all warehouses that went to affiliated warehouses rose from 16.5 percent in 1940 to 20.1 percent in 1947.[6]

C. An alleged increase in the proportion of steel sold in the more expensive cold-rolled and other highly finished types at the expense of the less costly, hot-rolled types

* * * shipments of cold-rolled sheets, as a percent of total shipments of all sheets, rose from 30.3 percent in 1940 to 42.9 percent in 1947; cold-rolled strip, as a percentage of all strip, increased from 17.4 to 32.8 percent; and cold-finished bars, as a percentage of all bars, advanced from 4.1 to 6.3 percent.[7]

D. An alleged drawing in of steel shipments closer to the centers of steel production

1. In the traditional surplus-producing centers, shipments, with few exceptions, have increased greatly, a result which would be expected on the basis of the assumption that producers have acted in such a way as to avoid freight absorption, selling a much greater portion of their output to nearby purchasers.

2. In the deficit-producing centers—those areas which historically have not produced enough to meet their own needs—shipments have either declined or risen only slightly, as would be expected on the basis of (*a*) the known fact that capacity in such areas is insufficient to meet the local demand and (*b*) the assumption that the surplus centers, which in the past have absorbed freight on shipments into these areas, have to a considerable extent ceased to do so.

3. In the nonproducing areas the behavior has varied widely. The variations in these areas can usually be explained on the basis of the location of the area relative to surplus producing centers and their freight absorption requirements.[8]

With the invasion of South Korea, steel again became tight, and once more small-business men were making complaints to the Senate and House Small Business Committees. Because of the obvious impact of any maldistribution of steel on the maintenance of competition, the Federal Trade Commission immediately endeavored to reinstitute, on a continuing basis, the same type of survey which the Senate Small Business Committee had conducted for the earlier period. However, the Commission was unable to obtain necessary clearance, as required under the Federal Reports Act. Instead, the Commission has had to rely upon industry statistics published by the American Iron and Steel Institute and upon special tabulations of data prepared for it by the Bureau of the Census. Utilizing these other sources of data, the Commission has been able to focus on some, though not all, of the same points examined by the Senate Small Business Committee in its report. In addition, it has been possible to examine a few new and different points which were not analyzed in the committee report.

In brief, this report will be concerned with the following questions:

A. The distribution of steel among fabricating industries.

B. The distribution of steel within fabricating industries.

C. The distribution of steel between affiliated and independent warehouses.

D. Shifts in the product pattern.

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[5] Ibid., pp. 9–10.
[6] Ibid., p. 13.
[7] Ibid., p. 18.
[8] Ibid., p. 36. On this last point, it should be noted that since the report of the Senate Small Business Committee was prepared, the steel industry has largely abandoned the basing-point system. It would obviously be of interest to determine whether or not the abandonment of that system resulted in any change in the geographic distribution of steel.

DISTRIBUTION OF STEEL AMONG FABRICATING INDUSTRIES

As has been noted, numerous complaints have been made by small firms to the Senate and House Small Business Committees concerning their inability to obtain steel in the present mobilization period. Among the reasons cited was alleged favoritism of the producing mills for certain industries as against others. It has been contended, for example, that fabricating industries which are owned in part by members of the steel industry have fared singularly well in their receipts of steel. Moreover, it has been contended that the automotive and household appliance industries, which, during the period covered by this study were reaching new peaks in production, have been receiving more than their "fair" share of steel supplies, reflecting the desire of the steel producers to maintain good peacetime relations with these important peacetime customers.

From data gathered in the 1949 Survey of Manufactures and more recent reports of metal fabricators to the National Production Authority, it is possible to compare, on an industry-by-industry basis, the amount of steel consumed in the average quarter of 1949 with the amount consumed in the fourth quarter of 1950. The results of this comparison, which was made for 57 metal-fabricating industries, are presented in table 1.[9] There the industries have been grouped into three classes, those with large, moderate, and small steel requirements, as of 1949. Within each class the industries have been ranked according to the percentage change in their consumption of steel between the 1949 average quarter and the fourth quarter of 1950.

[9] Data on steel consumption for 1949 and for the fourth quarter of 1950 were available for 64 identical metal-fabricating industries. Of these, the 1950 estimates for seven industries seemed too doubtful for inclusion in the study. Moderately large steel-consuming industries upon which satisfactory data were unattainable included iron and steel forgings, sheet-metal work, metal furniture, and electrical welding apparatus. For a description of the data made available for the study, and the statistical methods used, see appendix.

TABLE 1.—*Estimated consumption of carbon steel (including castings) by principal metal-consuming industries (average quarter 1949 and fourth quarter 1950)*

	Average quarter 1949 [1] net tons	Fourth quarter 1950 [2] net tons	Change	
			Net tons	Percent
Industries with 1949 consumption exceeding 500,000 tons:				
Heating and cooking apparatus, not elsewhere classified	185,594	320,540	134,946	73
Bolts, nuts, washers, and rivets	200,064	333,683	133,619	67
Metal stampings	657,347	1,066,676	409,329	62
Wirework, not elsewhere classified	208,568	319,979	111,411	53
Metal barrels, drums, and pails	176,880	254,449	77,569	44
Construction and mining machinery	165,160	232,035	66,875	40
Refrigeration machinery	201,640	280,684	79,044	39
Hardware, not elsewhere classified	131,762	179,460	47,698	36
Structural and ornamental products	1,025,944	1,387,863	361,919	35
Boiler shop products	468,742	557,620	88,878	19
Tin cans and other tinware	843,798	997,438	153,640	18
Motor vehicles and parts	1,994,182	2,285,921	291,739	15
Farm machinery (excluding tractors)	334,102	345,553	[3]	
Tractors	186,585	191,484	[3]	
Railroad and street cars	328,397	323,519	[3]	
Shipbuilding and repairing	152,839	112,480	−40,359	−26
Industries with 1949 consumption between 100,000 and 500,000 tons:				
Domestic laundry equipment	31,742	62,478	30,736	97
Metalworking machinery, not elsewhere classified	39,095	74,769	35,674	91
Wiring devices and supplies	77,841	147,448	69,607	89
Power-transmission equipment	36,931	65,884	28,953	78
Oil field machinery and tools	39,851	69,995	30,144	76
Hand tools, not elsewhere classified	40,292	67,588	27,296	68
Transformers	27,530	45,109	17,579	64
Metal doors, sash, and trim	89,294	140,771	51,477	58
Valves and fittings (excluding plumbers)	37,940	58,984	21,044	55
Motors and generators	104,100	151,282	47,182	45
Electric-control apparatus	35,931	52,179	16,248	45
Engine electrical equipment	59,841	84,755	24,914	42
Pumps and compressors	25,940	36,036	10,096	39
Electrical appliances	49,448	65,766	16,318	33
Conveyors	60,186	68,073	7,887	13
Locomotives and parts	72,977	80,309	7,332	10
Industries with 1949 consumption of less than 100,000 tons:				
Service and household machines, not elsewhere classified	4,797	13,264	8,467	177
Radios and related products	22,570	60,488	37,918	168
Communications equipment, not elsewhere classified	2,772	6,334	3,562	128
Vitreous enameled products	16,796	37,952	21,156	126
Truck trailers	23,196	49,035	25,839	111
Ball and roller bearings	13,591	27,859	14,268	105
Paper-industries machinery	3,757	7,614	3,857	103
General industrial machinery, not elsewhere classified	22,320	44,842	22,522	101
Nails and spikes	11,306	22,173	10,867	96
Aircraft engines	4,881	9,205	4,324	89
Internal-combustion engines	18,008	33,573	15,565	86
Typewriters	5,475	8,667	3,192	58
Industrial trucks and tractors	19,918	31,102	11,184	56
Textile machinery	20,716	31,729	11,013	53
Elevators and escalators	12,313	18,321	6,008	49
Aircraft	4,492	6,347	1,855	41
Motorcycles and bicycles	17,366	22,679	5,313	31
Cutlery	4,738	5,811	1,073	23
Computing and related machines	10,994	11,869	875	8
Telephone and telegraph equipment	10,456	11,200	744	7
Steel springs	24,951	23,367	[3]	
Steam engines and turbines	21,291	19,909	−1,382	−6
Vacuum cleaners	6,267	5,638	−629	−10
Insulated wire and cables	7,090	5,674	[3]	
Aircraft equipment, not elsewhere classified	3,447	1,898	−1,549	−45
Total (57 industries)	8,404,051	10,977,360		31

[1] One-fourth the sum of the Census' estimate of 1949 consumption of steel acquired by purchase or interplant transfer plus the 1949 consumption of steel produced in consuming plants, or where precise information is not available, the maximum consumption of steel produced in consuming plants possible within the Census' estimate.

[2] The sum of consumption reported to NPA by surveyed companies plus an estimate of the consumption of remaining firms in the industry. These estimates in no case constituted more than one-quarter of an industry's steel consumption. They were developed on the assumption that the unsurveyed firms in an industry, as a group, accounted for the same proportion of the industry's carbon-steel consumption in 1950 fourth quarter as they obtained of the industry's aggregate value of shipments and interplant transfers in 1947.

[3] The small change indicated by comparing the estimates for 1949 average quarter and 1950 fourth quarter might disappear or be replaced by a small change in the opposite direction if reports were available from all firms.

The percentage changes for the industries in the third class should be interpreted with caution in view of the small tonnages involved and the possibility that other materials might have been used in either 1949 or 1950 in place of carbon steel.

The outstanding feature of table 1 is the difference in the percentage change as among the various industries.[10] In none of the three classes of industries is there any "clustering" or central tendency of the percentage changes around any given figure, such as an increase of 30 or 40 percent.[11] Rather, the increases are widely dispersed. Among the major consuming industries (i. e., those with 1949 carbon-steel consumption exceeding 500,000 tons), the most interesting behavior is exhibited on the one hand by the farm machinery and tractor industries, and on the other by five industries which are closely related to the steel automotive or household-appliance industries. (See chart 1.)

The farm machinery and tractor industries showed small increases in steel consumption, which, however, might disappear or be replaced by slight decreases if all of the smaller companies had been asked to report, and actual consumption data were available in place of the estimates for these companies upon which the Commission has had to rely. Moreover, strikes in the fall of 1950 against Deere & Co. and International Harvester Co. probably resulted in a substantial curtailment of their steel consumption during the fourth quarter.[12]

The five major consuming industries with the sharpest increases in carbon-steel consumption were as follows:

Industry and percent change, average quarter, 1949; fourth quarter, 1950

	Percent
Heating and cooking apparatus, not elsewhere classified	73
Bolts, nuts, washers, and rivets	67
Metal stampings	62
Wirework, not elsewhere classified	53
Metal barrels, drums, and pails	44

Of these five industries, one, metal barrels and drums, is largely owned by the steel industry itself. On the basis of information recently gathered by the Federal Trade Commission, it is possible to determine the share of the output of specific industries accounted for by firms whose principal line of business lies in another industry. Thus, in 1950, 71 percent of the total value of product of the metal barrels and drums industry was accounted for by plants owned by steel companies. In addition, steel producers have important interests in two other of these five industries—wirework, not elsewhere classified, and bolts and nuts. In wirework, plants owned by the steel companies accounted, in 1950, for 15 percent of the industry's total value of product; in bolts and nuts, plants owned by the steel companies produced 12 percent of the industry's value of product.

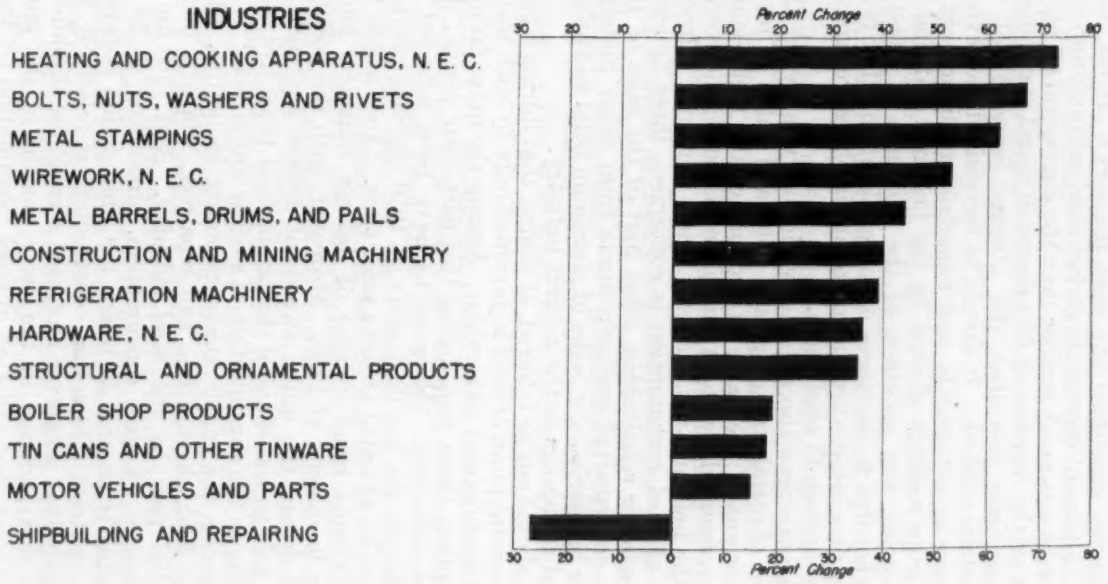
[10] These data on steel consumption are based on reports by all large consuming plants, and by some of the remaining establishments. Where small establishments account for an important part of total industry consumption, a substantial degree of uncertainty attaches to the estimates of industry consumption, and consequently to the amount of change from 1949 to the last quarter of 1950. But as demonstrated in appendix A, the general pattern of change persists under rigorously conservative assumptions.

[11] While in some industries during normal years steel might be consumed at lower rates during the fourth quarter, it is unlikely that any normal seasonal decline occurred during the fourth quarter of 1950.

[12] Roughly half the employees of Deere & Co. were idle from September 1 to December 20, 1950. Six large plants of International Harvester were shut down until November 6 by a United Auto Workers strike, and production in other plants was crippled for lack of parts. All but a few of these other plants were shut down for 3 weeks by a strike of the Farm-Equipment Workers. International Harvester production losses were partially offset by overtime operation of several plants during November and December. (International Harvester Co. president's quarterly review for August, September, and October 1950; president's quarterly review for November and December 1950 and January 1951. Deere & Co., report for 3 months ended January 31, 1951.)

CHANGE IN CONSUMPTION OF CARBON STEEL BY 16 MAJOR STEEL CONSUMING INDUSTRIES,*

AVERAGE QUARTER 1949 — FOURTH QUARTER 1950


INDUSTRIES
HEATING AND COOKING APPARATUS, N. E. C.
BOLTS, NUTS, WASHERS AND RIVETS
METAL STAMPINGS
WIREWORK, N. E. C.
METAL BARRELS, DRUMS, AND PAILS
CONSTRUCTION AND MINING MACHINERY
REFRIGERATION MACHINERY
HARDWARE, N. E. C.
STRUCTURAL AND ORNAMENTAL PRODUCTS
BOILER SHOP PRODUCTS
TIN CANS AND OTHER TINWARE
MOTOR VEHICLES AND PARTS
SHIPBUILDING AND REPAIRING
Percent Change
30 20 10 0 10 20 30 40 50 60 70 80
Percent Change

* Industries with 1949 carbon steel consumption exceeding 500,000 tons

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In addition to these relationships with the steel industry, two of these five fields, metal stampings and bolts and nuts, are closely related to the automobile and household-appliance industries, which, of course, constitute the steel industry's largest peacetime market. The 15-percent increase in carbon steel consumption by the automobile industry was much smaller than the increase of 67 percent in bolts and nuts, or the increase of 62 percent in metal stampings—indeed it was substantially less than the average increase (31 percent) for all industries studied. It should be recognized, however, that the maintenance of automobile and household-appliance output depends on the *prior* receipts of steel by the bolt and nut and metal-stampings industries; any shortage of the products of these two industries, whether due to shortages of materials or to other factors, would in a short time cripple production of automobiles, refrigerators, stoves, and other household appliances.

In peacetime the automotive industry is by far the largest single buyer of metal stampings and bolts and nuts. Thus, in 1947, nearly 30 percent of the value of product of the metal-stampings industry was consumed by the automobile industry; the corresponding figure for the bolt and nut industry was 8 percent.[13] Insofar as the question of steel consumption is concerned, these figures understate the buyer-seller relationship, since part of the sales of these two industries consisted of products made from other materials and sold to other industries, e. g., sales of aluminum bolts and nuts and aluminum-metal stampings to the aircraft industry.

It should not be inferred, of course, that during a period of shortage, the consumption of steel is governed only by such matters as customer relationships and ownership. Among the other factors affecting consumption, there was, during this particular period, the matter of defense contracts. However, to have been reflected in consumption figures by the fourth quarter of 1950, defense contracts would have had to be awarded at some prior time. And, as has been noted, only a relatively small volume of defense contracts had been awarded prior to the end of 1950. Moreover, with the possible exceptions of steel drums, the initial awards of defense contracts did not call for any substantial share of the products of these five industries, at least insofar as the consumption of steel is concerned.[14]

Among the major steel-consuming industries, there is only one other field, shipbuilding and repairing, which is owned in any substantial part by the steel industry. And this industry showed a decline in its steel consumption, amounting to 26 percent. Shipbuilding is an area in which the time period between the awarding of a contract and actual construction is relatively long; hence it is unlikely that whatever increased awards for shipbuilding which may have been granted in the early months of the mobilization effort could have been reflected in steel consumption by the fourth quarter of 1950.

[13] 1947 Census of Manufactures, vol. II, p. 615. The estimate on the bolt and nut industry is based on unpublished tabulations of census reports. If the metal-stampings industry produced the same proportion of automobile stampings by value in 1949 as in 1947, automotive stampings accounted for 38 percent of the industry's 1949 dollar shipments. 1949 Annual Survey of Manufactures: MAS–49–1, p. 4; MAS–49–3, p. 22.

[14] The bolt and nut and metal-stamping industries had presumably received a substantial volume of contract awards before the fourth quarter of 1950, but for items to be used in aircraft production and to be made from aluminum.

DISTRIBUTION OF STEEL WITHIN FABRICATING INDUSTRIES

In addition to analyzing the change in consumption of steel as among different industries, an attempt has also been made to determine the change in the concentration of steel consumption within particular industries. Specifically, an attempt has been made to determine whether the four largest steel-consuming companies [15] increased or decreased their share of the industry's total carbon-steel consumption, as between the average quarter of 1949 and the fourth quarter of 1950.

This analysis is based upon special tabulations prepared for the Federal Trade Commission by the Bureau of the Census and based upon data compiled by it for the National Production Authority. As has been noted, acceptable industry-wide estimates of steel consumption for the year 1949 and the fourth quarter of 1950 were developed for 57 industries. For 50 of these industries, it is possible to compute concentration ratios, i. e., the proportion of the industry's steel consumption accounted for by its four largest companies.

Upon examination it was found that the great majority of these industries showed little change in concentration in either direction, as might perhaps be expected owing to the shortness of the period. In 26 industries the amount of change might be explained in terms of the imprecision of the estimates of industry consumption: such changes have not been treated as significant.[16] The amount of change in nine other industries, while statistically significant, is no larger than 3½ percentage points. This is so small as to admit of several interpretations.[17] The showing for the 15 remaining industries is summarized in table 2.

In a few industries with spectacular increases in carbon-steel consumption, the largest consumers used a greater part of the industry's total in the second period than they did in the first. Thus, the amount of carbon steel used for the domestic-laundry-equipment industry increased by 97 percent, the largest increase for any industry consuming between 100,000 and 500,000 tons of steel during 1949. Similarly, carbon-steel consumption for radios and related products increased by 168 percent, which was the largest increase for any industry consuming less than 100,000 tons in 1949. As table 2 shows, the share of the carbon steel used by the largest four consumers increased 8 percentage points in the domestic-laundry-equipment industry and by 11 percentage points in the radio-television industry.

In industries such as these which were characterized by a spectacular increase in output, expansion of production during this relatively short period of time must have come in large part from the utilization of productive facilities which formerly were engaged in other industries. The increase in concentration which took place in these fields may have been due to the fact that the larger firms were

[15] The four companies whose plants in the given industry consumed the most carbon steel.

[16] No significance has been attributed to the difference in concentration of steel consumption unless it was larger than could be attributed to the combined effect of (*a*) a two-standard error discrepancy in the 1949 estimate of industry consumption, and (*b*) an error in the 1950 estimate of industry consumption attributable to a disparity of 10 percent between the fraction of the industry's carbon-steel consumption accounted for by nonreporting firms in the fourth quarter of 1950, and the fraction of the industry's dollar shipments accounted for by these firms in 1947. These are both conservative assumptions, and used together they are a rigorous test.

[17] The increase in concentration in the telephone- and telegraph-equipment industry is included in table 2, although the increase may have been as small as 2.1 percentage points, because it represented a further increase in an already high concentration ratio. See appendix A for the concentration ratios on all the industries, and the test of significance.

TABLE 2.—*15 selected industries: Percentage of carbon-steel consumption accounted for by 4 largest consumers, 1949 and fourth quarter, 1950*

Industry	Percentage used by 4 largest consumers		Percentage points change
	1949	Fourth quarter, 1950	
Radios and related products	38	49	+11
Domestic laundry equipment	49	57	+8
Vacuum cleaners	71	79	+8
Telephone and telegraph equipment	[1] 94	[1] 98	+4
Electrical appliances	56	49	−7
Transformers	88	80	−8
Aircraft	74	66	−8
Shipbuilding and repairing	60	51	−9
Power-transmission equipment	45	35	−10
Locomotives and parts	93	83	−10
Motors and generators	80	69	−11
Motorcycles and bicycles	74	62	−12
Farm machinery (except tractors)	57	43	−14
Aircraft equipment, not elsewhere classified	65	42	−23
Textile machinery	67	40	−27

[1] The concentration ratios for the telephone- and telegraph-equipment industry represent data for 8 companies. Data for 4 companies withheld to avoid disclosure of information on individual companies.

in a better position than their smaller rivals to shift their existing facilities to the fields of rapid expansion.

But in industries which were characterized by less extensive though still substantial increases in steel consumption the largest consumers tended to account for a declining share of the total. In such cases the more moderate expansion in output could have been accounted for in large part by the utilization of facilities already engaged in in the industry. It would appear that in industries of this type the smaller firms were either more capable or more interested in expanding their utilization of facilities. Instances in point are the decline in concentration of the electric-transformer industry, which was accompanied by an increase of about 64 percent in the total amount of carbon steel consumed; and the electric-power-transmission-equipment industry, which experienced an increase of nearly 80 percent in carbon-steel consumption. Other industries with a substantial decline in concentration in carbon-steel consumption experienced somewhat smaller increases in steel consumption: textile machinery, 53 percent; motors and generators, 45 percent; electrical appliances, 33 percent; motorcycles and bicycles, 30 percent; and locomotives, a 10 percent increase. The decline in concentration of consumption in the farm-equipment industry reflects major strikes against International Harvester Co. and Deere & Co. Manufacturers of aircraft parts used 45 percent less carbon steel, probably due in part to shifts toward the use of other metals. The decline in concentration of carbon-steel consumption in shipbuilding coincided with a decline in industry-wide use of carbon steel. This experience probably is attributable to a tapering off of current construction of large ships.

DISTRIBUTION OF STEEL BETWEEN AFFILIATED AND INDEPENDENT WAREHOUSES

Approximately 14 percent [18] of the Nation's steel supply finds its way to the ultimate consumer through steel warehouses. These firms generally tend to specialize on small orders, performing the functions

of sorting, grading, and cataloging, and normally disposing of the product at a somewhat higher price than the mill figure. In periods of shortage, steel warehouses are subjected to a heavy strain, particularly from small buyers. The position of warehouses during such times has been described by the Senate Small Business Committee in these words:

> With the development of the extreme postwar shortage, a very large part of the unmet demand became focused on the warehouses. The small producer who had formerly dealt with the mill, but who, for one reason or another, was cut off from that source, looked immediately to the warehouse. Other small producers, who had always depended upon the warehouse for their supply, but whose operations had expanded sufficiently to warrant placing orders on the mills, found that no mill would accept their business, since they had not been prewar customers and thus had no "historical base." On top of this, the fringes of the business world which speculated in the "gray" market were constantly endeavoring to secure warehouse steel at practically any price.[19]

Moreover, numerous complaints were made to the effect that the warehouse problem was aggravated by an alleged maldistribution of steel in favor of warehouses affiliated with steel companies, at the expense of nonaffiliated or independent warehouses. As has been noted, the committee, upon examination of the matter, found that there had indeed been a shift between 1940 and 1947 in favor of affiliated warehouses, with the shift being particularly pronounced in the case of sheets and strip.

An attempt has been made in this report to determine whether or not in this later shortage period—following the invasion of South Korea—affiliated warehouses received a larger proportion of warehouse shipments. The source of the information consists of special tabulations derived from NPA Form 55, on which steel producers are required, among other things, to differentiate between shipments to affiliated warehouses and shipments to all other warehouses.[20] Inasmuch as NPA did not require reports for the period prior to January 1950, nor for the period October 1, 1950, to May 31, 1951, this discussion will necessarily involve the use of a different base period than that used in the other sections of the report, the year 1949. Since the invasion of South Korea took place on June 25, 1950, it is unlikely that orders reflecting the increased tempo of mobilization were transformed into actual steel shipments much before the fourth quarter of that year. Consequently, the base period to be used in this discussion, the first 9 months of 1950, was a period of relatively free supply. Shipments during that period will be contrasted with shipments during the 3-month period, June–August 1951.

The results of these tabulations are presented in table 3, which separates the various steel products into two groups: products which warehouses handle in large tonnages, i. e., over 200,000 tons in the base period; and those which they handle in smaller tonnages. Within each group the various products are ranked by the amount of the increase in the share of shipments going to affiliated warehouses.

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[18] This ratio is based on reports to the National Production Authority for the first 9 months of 1950, and reflects shipments directly to distributors. In addition, warehouses are the distributive channel for a substantial tonnage shipped directly from steel mills to users. The American Iron and Steel Institute which includes the latter in warehouse shipments, reported 17 percent of all steel shipments during the first 9 months of 1950 to be shipments to "jobbers, dealers and distributors."

[19] 81st Cong., 1st sess., Senate Small Business Committee, S. Rept. No. 44, Changes in Distribution of Steel, 1940–47, p. 11.

[20] The figures presented in the Senate Small Business Committee report are not directly comparable with the figures yielded by NPA Form 55 because (*a*) the former were based on reports from only 14 major steel-producing companies, whereas the latter were based on reports from practically the entire steel industry; and (*b*) the former related only to carbon steel, whereas the latter relates to all grades of steel, carbon and alloy.

TABLE 3.—*Shipments of steel (all grades) to all warehouses, and to warehouses affiliated with steel producers, January–September 1950 and June–August 1951*

	Jan. 1 to Sept. 30, 1950		June 1 to Aug. 31, 1951		Change in affiliated warehouses as percent of all warehouses (percentage points)
	All warehouses (net tons)	Affiliated warehouses as percent of all warehouses (percent)	All warehouses (net tons)	Affiliated warehouses as percent of all warehouses (percent)	
Large-tonnage products:					
Oil country goods	242,632	16.0	63,915	50.4	+34.4
Plates	503,684	19.7	245,962	22.0	+2.3
Structural shapes	731,691	14.6	220,843	21.7	+7.1
Galvanized sheets	696,987	21.6	188,730	19.2	−2.4
Hot-rolled bars	841,914	15.3	281,993	18.5	+3.2
Hot-rolled sheets	542,113	10.6	249,084	14.3	+3.7
Cold-rolled sheets	527,565	9.0	217,915	11.9	+2.9
Drawn wire	219,299	1.8	56,892	8.5	+6.7
Cold-finished bars	268,553	1.9	118,269	6.3	+4.4
Wire nails and staples	590,037	.6	167,060	4.6	+4.0
Standard pipe	1,185,480	1.8	381,262	3.1	+1.3
Wire fence	276,821	.3	74,045	2.6	+2.3
Small-tonnage products:					
Cold-rolled strip	78,713	51.3	28,664	52.5	+1.2
Tool steel, bars	15,278	43.9	14,795	43.9	(1)
Hot-rolled strip	70,902	22.9	38,116	31.2	+8.3
Enameling sheets	6,973	23.6	2,282	26.2	+2.6
Electrical sheets and strip	3,731	19.4	1,889	17.9	−1.5
Wire rods	21,218	.9	8,887	16.3	+15.4
Reinforcing bars	152,266	4.6	83,350	16.0	+11.4
Blooms, slabs, and billets	12,700	.9	12,006	12.6	+11.7
Line pipe	62,657	7.6	38,186	9.9	+2.3
Mechanical tubing	58,768	8.4	29,035	7.6	−.8
Barbed and twisted wire	154,680	.5	42,657	4.1	+3.6
Pressure tubing	29,697	2.5	13,113	3.5	+1.0
Bale ties	74,530	3.5	39,888	3.4	−.1
Rails, other than standard	23,014	1.4	4,513	3.2	+1.8
Sheets, all other coated	18,404	1.6	7,431	.8	−.8
Rails, standard	3,530	2.0	1,318	.6	−1.4
Joint bars	2,186	1.2	513	.4	−.8
Tin and terne plate, hot-dipped	32,681	.8	7,799	.2	−.6
Products not shipped to both types of distributors in both periods:					
Ingots	50,239	0	15,313	2.8	+2.8
Track spikes	2,360	0	1,190	4.4	+4.4
Tin mill black plate	44,058	0	26,535	.8	+.8
Tin plate, electrolytic	21,215	0	14,255	0	(1)
Other products	748	0	2,209	0	(1)

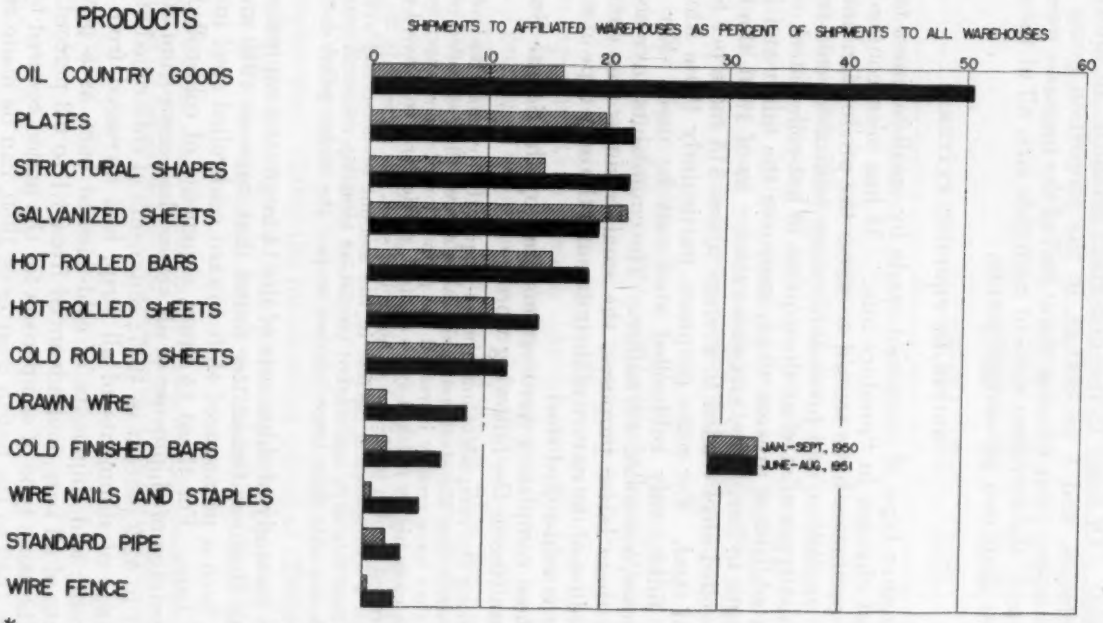
[1] No change.

Source: Compilation of reports to National Production Authority on NPAF-55 and NPAF-17.

Taking all products together, the share of warehouse shipments sent to affiliated warehouses rose from 9.9 percent from January–September 1950 to 14.1 percent in June–August 1951.

The share of warehouse steel going to affiliated warehouses in both periods is shown on table 3 for each of the 12 major steel products. At the top of the table it will be noted that oil country goods showed a large increase in the proportion going to affiliated warehouses; during January–September 1950, only 16.0 percent of warehouse shipments of this product went to affiliated warehouses; by June–August 1951, the proportion had soared to 50.4 percent. Significant increases in the share going to affiliated warehouses are also shown for structural shapes (from 14.6 to 21.7 percent); drawn wire (from 1.8 to 8.5 percent); cold-finished bars (from 1.9 to 6.3 percent); wire nails and staples (from 0.6 to 4.6 percent); and hot-rolled sheets (from 10.6 to 14.3 percent). Of the 12 major steel products presented on the chart, only one, galvanized sheets, showed a decline in the proportion going to affiliated warehouses (from 21.6 to 19.2 percent). (See chart 2.)

SHIPMENTS OF MAJOR STEEL PRODUCTS TO AFFILIATED WAREHOUSES* JANUARY-SEPTEMBER 1950 AND JUNE-AUGUST 1951



*Products with shipments to warehouses exceeding 200,000 tons during the period January-September 1950.

Of the 18 smaller-tonnage steel products, those with annual shipments during the base period of less than 200,000 tons, the sharpest increases in the proportion going to affiliated warehouses were recorded for wire rods (from 0.9 to 16.3 percent); blooms, slabs, and billets (from 0.9 to 12.6 percent); and reinforcing bars (from 4.6 to 16.0 percent). Of these 18 less-important products, 10 showed increases, 7 decreases, and 1 no change, in the proportion going to affiliated warehouses. But whereas about half of the increases were substantial in extent, the decreases were of negligible size, all of them amounting to less than two percentage points.

SHIFTS IN PRODUCT PATTERN

Another type of complaint made by small-business men has concerned changes in "product mix." It has been contended that the steel producers have tended to stress the production and sale of the more expensive, and presumably more profitable, cold-rolled or cold-finished types of steel at the expense of hot-rolled steel. Cold-rolling is an additional process which improves the finish and increases the strength of bar, strip, and sheet steel. As of 1950, the base price of cold-rolled steel tended to average about $15 more per ton than hot-rolled steel. For some purposes, particularly those which require a high finish, only cold-rolled steel can be used. For many other purposes, hot-rolled will suffice. The complaints have been concerned with these latter purposes, the small-business men contending that regardless of the nature of their demand the only type of steel offered to them is cold-rolled steel.

These complaints were summarized by the Senate Small Business Committee in the following words:

> Among the complaints made most frequently by small business has been the contention that the steel companies have altered their so-called product pattern; that they have greatly increased the proportion of their output sold in the form of the more highly finished types of steel, particularly cold-rolled steel; that since cold-rolled steel is made out of hot-rolled steel, the increase in its production has meant a corresponding decline in the amount of hot-rolled available for sale; and that this shift has worked particular hardship on small enterprise which is much less able than large business to pay the higher prices for the cold-rolled products.[21]

In its study of shipments of the 14 large steel companies the Senate Small Business Committee found that between 1940 and 1947 there had been a pronounced shift toward cold-rolled steel in sheets, strip, and bars. For these 14 firms, shipments of cold-rolled sheets, as a percentage of shipments of all sheets, had risen from 30.3 percent in 1940 to 42.9 percent in 1947; shipments of cold-rolled strip, as a percentage of shipments of all strip, had increased from 17.4 to 32.8 percent; and shipments of cold-finished bars, as a percent of shipments of all bars, had advanced from 4.1 to 6.3 percent.[22]

The same type of comparison for the period covered by this report, from 1949 to the fourth quarter of 1950, can be made on the basis of data compiled by the American Iron and Steel Institute. These figures, which represent a coverage of practically the entire steel industry, are presented in table 4.

[21] Senate Small Business Committee report, op. cit., p. 14.
[22] Senate Small Business Committee report, op. cit., p. 18.

TABLE 4.—*Shipments of hot-rolled and cold-rolled carbon-steel sheets, strip, and bars, 1949 and fourth quarter, 1950*

	1949		Fourth quarter, 1950	
	Tons	Percent	Tons	Percent
Sheets:				
Hot-rolled	5,994,824	47.1	1,984,925	45.6
Cold-rolled	6,737,031	52.9	2,364,320	54.4
Strip:				
Hot-rolled	1,569,885	55.6	614,479	56.9
Cold-rolled	1,255,025	44.4	465,796	43.1
Bars:				
Hot-rolled	4,928,506	82.8	1,605,509	82.1
Cold-finished	1,021,704	17.2	349,401	17.9

Source: American Iron and Steel Institute.

From the table it will be noted that in the case of sheets, the cold-rolled product rose from 52.9 percent of the total in 1949 to 54.4 percent in the fourth quarter of 1950; in the case of strip, the cold-rolled product showed a decline, dropping from 44.4 to 43.1 percent; and in the case of bars, there was less change, the cold-rolled product comprising 17.2 percent in the former period and 17.9 percent in the latter.

As to the cause of the shift toward cold-rolled sheets—the steel product on which most of the complaints have centered—there has been a long-term increase in demand for those end products, such as automobiles and household appliances, which require the higher-finished, more expensive type of steel. At the same time, numerous complaints have been made in recent years alleging "pressure" on the part of the steel producers to induce the purchase of the more expensive product. Unfortunately, within the limited scope of a statistical report such as this, it is impossible to determine the relative importance of these two causal factors.

From the nature of demand, however, it is clear that cold-rolled sheets are used principally in the production of civilian goods.[23] In the present mobilization period, as in World War II, the impact of war demand has fallen more on hot-rolled than on cold-rolled sheets. Hence, any continuation during the mobilization period of this trend toward cold-rolled sheets, or even the absence of a trend toward hot-rolled, would be difficult to explain merely on the basis of the nature of the demand.

[23] Of total shipments of cold-rolled sheets amounting to 6,737,000 tons in 1949, 3,965,000 went to the automotive industry, 611,000 to household appliances, 344,000 to contractors products, and 428,000 to domestic and commercial equipment. In that year, these four fields accounted for 79 percent of total shipments of cold-rolled sheets.

APPENDIX

Statistical Methodology

Distribution of steel among industries

The 1949 Annual Survey of Manufactures included questions on carbon-steel consumption. As this survey reached only a sample of the smaller establishments, estimates of industry consumption with a standard error not exceeding 15 percent were possible for only 64 of the 102 metal-fabricating industries.[1] The report on steel consumption for the fourth quarter of 1950 to the National Production Authority was sought for all plants with more than 100 employees in 1947, except that in some industries where the use of critical materials in 1947 was quite high the survey was designed to include all firms with more than 50 employees in 1947.[2] Unlike the 1949 annual survey, there is no direct way of estimating the proportion of each industry's carbon-steel consumption accounted for by unsurveyed establishments. Therefore, estimates of each industry's carbon-steel consumption were developed on the assumption that the nonreporting establishments consumed the same fraction of the industry's carbon steel in the last quarter of 1950 as their share of the industry's value of shipments and interplant transfers in 1947.[3] Seven industries were dropped from the study because by the test of 1947 dollar shipments less than 70 percent of the industry had reported steel consumption for 1950 fourth quarter. For six of these seven industries the estimates of 1949 consumption also had a relatively high standard error.

For no industry included in the study with indicated 1949 carbon-steel consumption exceeding 100,000 tons does the standard error for the estimate of 1949 steel consumption exceed 9 percent. In only four such industries is 1950 coverage as indicated by 1947 dollar shipments less than 83 percent: wirework, not elsewhere classified, 80.4 percent; hand tools, not elsewhere classified, 74.8 percent; metal doors, sash and trim, 77.3 percent; and conveyors, 80.8 percent. Below are contrasted the results of calculating the change in steel consumption between the average 1949 quarter and the final 1950 quarter, using the central estimate of 1949 consumption (the estimates used in the text) and the upper [4] two standard error confidence limit

[1] 1949 Annual Survey of Manufactures Preliminary Report, Metals Consumed by Metal Product Producers, For Selected Industries: 1949 and 1947, Series: MAS-49-5 (September 13, 1951), table 2. In the instances where the tonnage produced and consumed in the same establishment was withheld, it was possible to obtain a statement that the quantities fell within certain comparatively wide limits, and to add the upper limit (which resulted in a conservative estimate of the change from 1949 to 1950) to the census figure for industry consumption of steel acquired by purchases and interplant transfers. The adjustment exceeded 5 percent of the total tonnage for only two industries, the tractor industry and the locomotive industry. In these two cases the adjustment was 15 percent.

[2] National Production Authority, Report of Plant Operation for Metal Working Industries: Fourth Quarter: 1950 (April 11, 1951), p. 1. Special compilations which included carbon-steel castings were made available in order that the data might be comparable with that for 1949.

[3] Ibid., pp. 14–16.

[4] The lower two standard error confidence limit was used in determining the significance of an apparent decline in steel consumption.

of the 1949 estimate of consumption (alternative assumption A), for all industries with a standard error in excess of 5 percent. Still more conservative estimates of the change are shown in the third column. These are based on the same estimates of 1949 consumption as those in the second column, and on 1950 estimates developed on the assumption that the nonreporting companies accounted for a 10-percent smaller [5] share of the 1950 fourth-quarter carbon-steel consumption of their respective industries than they enjoyed of 1947 dollar shipments (alternative assumption B). No change was considered statistically significant and included in the text unless it had the same algebraic sign computed from the central estimates and calculated on assumptions A and B.

Change in consumption of carbon steel between 1949 and the fourth quarter of 1950 for selected industries, based on central estimates of industry consumption and on 2 alternative assumptions

	Percent change in consumption of carbon steel, based on—		
	Central estimates (used in text)	Alternative assumption A	Alternative assumptions A and B
Cutlery	22.7	7.6	5.6
Hand tools, not elsewhere classified	67.7	47.1	42.4
Hardware, not elsewhere classified	36.2	17.4	15.2
Heating and cooking apparatus	72.7	51.5	50.2
Structural and ornamental products	35.2	20.7	16.8
Nails and spikes	96.1	66.2	61.3
Wirework, not elsewhere classified	53.4	30.0	26.9
Metal barrels, drums, and pails	43.9	24.0	23.1
Bolts, nuts, washers, and rivets	66.8	48.9	47.6
Farm machinery, except tractors [1]	3.4	−12.4	−13.4
Construction and mining machinery	40.3	25.4	24.5
Oil-field machinery and tools	75.6	48.8	46.5
Metalworking machinery, not elsewhere classified	90.6	72.7	70.2
Textile machinery	53.2	17.8	14.8
Paper-industries machinery	102.7	55.9	52.5
Pumps and compressors	38.6	17.7	15.5
Elevators and escalators	48.8	32.8	29.6
Conveyors [1]	13.1	−2.5	−4.7
Industrial trucks and tractors	56.2	20.1	17.5
Power-transmission equipment	78.4	56.5	53.4
General industrial machinery, not elsewhere classified	100.9	54.5	50.1
Service and household machines, not elsewhere classified	176.5	112.7	104.7
Insulated wire and cable [1]	−20.0	14.3	15.2
Engine electrical equipment	41.6	24.2	23.9

[1] Indicated change not statistically significant.

Distribution of steel within industries

The same source material was used to study the distribution of steel within industries. In 50 industries the largest 4 consumers could be identified with certainty, making possible a comparison of the share of the industry's steel consumption accounted for by the largest 4 consuming companies in 1949 with the share of the largest 4 consuming companies in the last quarter of 1950. Identification of the plants belonging to a given company was made by the Bureau of the Census, and was not available for comparison with the information of other Federal agencies on plant-company affiliations. For each industry with an apparent increase in concentration, 1950 "concentration

[5] A 10 percent larger share was assumed in determining the significance of an apparent decline in concentration.

ratios" also were developed assuming that nonreporting firms consumed a 10-percent larger share of the industry's steel than they had obtained of 1947 dollar shipments (assumption B). These ratios were contrasted with 1949 "concentration ratios" based on the lower two-standard error confidence limit of the 1949 estimate of industry consumption (assumption A). For each industry with an apparent decrease in the concentration of steel consumption, a corresponding test of significance was made: 1950 "concentration ratios" were developed on the assumption that nonreporting firms consumed a 10 percent smaller share of the industry's steel than they had obtained of 1947 dollar shipments; 1949 "concentration ratios" were computed on the upper two-standard error confidence limit of the 1949 estimate of industry consumption. With one exception, industries identified in the text as having a substantial increase or decrease in concentration were those with a change of at least 4 percentage points under these rigorously conservative assumptions. This exceptional case was telephone- and telegraph-equipment industry, which also was the single instance where the ratios showed the consumption of the largest eight consumers rather than the largest four. The minimum change for this industry was computed to be an increase 2.1 percentage points; however the ratio was so high for 1949, being 94 percent, that a further increase of 2.1 percent is noteworthy.

Concentration of carbon steel consumption by 4 largest consumers, 1948 and fourth quarter, 1950

[Based on central estimates of industry consumption and on 2 alternative estimates]

	Percent used by largest 4 consumers, based on—					
	Central estimates of industry consumption			Industry consumption under assumptions A and B		
	1949	1950 fourth quarter	Percentage points change	1949	1950 fourth quarter	Percentage points change
Industries with an apparent decrease in concentration:						
Tin cans and other tinware	80.2	77.1	−3.1	78.6	77.4	−1.2
Hand tools, not elsewhere classified	40.6	32.1	−8.5	35.6	33.2	−2.4
Heating and cooking apparatus, not elsewhere classified	22.4	16.2	−6.2	19.7	16.4	−3.3
Metal doors, sash, and trim	59.5	50.3	−9.2	54.0	51.8	−2.2
Boiler-shop products	33.6	29.0	−4.6	31.1	29.5	−1.6
Metal stampings	39.4	34.8	−4.6	37.2	35.5	−1.7
Steel springs	72.1	63.7	−8.4	66.8	64.5	−2.3
Bolts, nuts, washers, and rivets	39.6	36.9	[1] −2.7	35.4	37.2	[1] +1.8
Steam engines and turbines	93.1	92.5	[1] −.6	89.5	92.5	[1] +3.0
Farm machinery (except tractors)	56.9	43.0	−13.9	48.2	43.6	−4.6
Metalworking machinery, not elsewhere classified	52.8	49.0	[1] −3.0	47.8	49.8	[1] +2.0
Textile machinery	66.7	40.1	−26.6	51.3	41.1	−10.2
Paper-industries machinery	38.1	37.1	[1] −1.0	29.3	37.9	[1] +8.6
Pumps and compressors	32.4	27.1	−5.3	27.6	27.6	0
Elevators and escalators	69.2	66.4	[1] −2.8	61.8	68.1	[1] +6.3
Power-transmission equipment	44.9	34.8	−10.1	39.4	35.5	−3.9
General industrial machinery, not elsewhere classified	48.6	37.1	[1] −11.5	37.4	38.2	[1] +.8
Valves and fittings, except plumbers'	48.7	48.4	[1] −.3	44.4	48.7	[1] +4.3
Wiring devices and supplies	50.8	47.2	[1] −3.6	46.2	48.2	[1] +2.0
Motors and generators	80.1	69.0	−11.1	77.0	69.1	−7.9
Transformers	88.2	79.9	−8.3	86.5	80.4	−6.1
Electrical appliances	56.3	48.6	−7.7	53.1	48.9	−4.2
Communication equipment, not elsewhere classified	75.8	73.7	[1] −2.1	71.5	75.9	[1] +4.4
Motor vehicles and parts	61.9	60.6	−1.3	60.7	60.6	−.1
Truck trailers	53.4	47.4	[1] −6.0	48.5	48.7	[1] +.2
Aircraft	74.3	66.0	−8.3	71.4	66.1	−5.3
Aircraft equipment, not elsewhere classified	64.7	42.0	−22.7	58.8	43.1	−15.7
Shipbuilding and repairing	59.9	50.6	−9.3	57.6	50.9	−6.7
Locomotives and parts	92.8	82.6	−10.2	90.9	82.8	−8.1
Railroad and street cars	56.8	56.2	[1] −.6	55.7	56.3	[1] +.6
Motorcycles and bicycles	73.5	61.7	−11.8	72.1	62.0	−10.1
Industries with an apparent increase in concentration:						
Cutlery	37.2	39.6	[1] +2.4	43.2	38.9	[1] −4.3
Hardware, not elsewhere classified	34.3	40.8	[1] +6.5	40.8	40.1	[1] −.7
Structural and ornamental products	29.0	29.7	[1] +.7	32.9	28.7	[1] −4.2
Vitreous-enameled products	45.0	48.0	[1] +3.0	47.9	47.8	[1] −.1
Wirework, not elsewhere classified	22.8	26.2	[1] +3.4	27.8	25.5	[1] −2.3
Metal barrels, drums, and pails	64.8	73.2	[1] +8.4	77.2	72.7	[1] −4.5
Internal-combustion engines	52.1	53.8	[1] +1.7	56.6	53.6	[1] −3.0
Tractors	79.1	81.4	[1] +2.3	88.4	81.1	[1] −7.3
Construction and mining machinery	22.9	23.5	[1] +.6	26.0	23.3	[1] −2.7
Conveyors	29.6	29.8	[1] +.2	35.2	29.1	[1] −6.1
Industrial trucks and tractors	48.3	50.2	[1] +1.9	69.0	49.1	[1] −19.9
Computing and related machines	72.9	73.2	[1] +.3	74.4	73.1	[1] −1.3
Domestic laundry equipment	49.4	56.7	+7.3	50.4	56.5	+6.1
Vacuum cleaners	71.1	79.1	+8.0	74.1	79.0	+4.9
Refrigeration equipment	45.6	46.4	[1] +.8	48.6	46.1	[1] −2.5
Ball and roller bearings	54.4	55.4	[1] +1.0	57.9	55.1	[1] −2.8
Electrical control apparatus	50.2	52.2	[1] +2.0	52.2	51.7	[1] −.5
Radios and related products	38.1	49.4	+11.3	40.5	49.0	+8.5
Telephone and telegraph equipment	[2] 94.3	[2] 98.4	[2] +4.1	[2] 96.2	[2] 98.3	[2] +2.1

[1] Indicated change not statistically significant.
[2] 8 largest consumers in the telephone- and telegraph-equipment industry.

Distribution of steel among warehouses

The study of the proportion of warehouse-destined steel shipped to warehouses affiliated with steel producers has been developed from reports to the National Production Authority. That agency's order M–6 defines a steel distributor (warehouse) as—

> a person engaged in the business of maintaining facilities and equipment for the stocking and distribution of rolled or drawn steel products for sale or resale in the form as received or after performing such operations as cutting to length, shearing to size or shape, pipe threading, or sorting and grading. A person who, in connection with any sale of such steel products from his stock, bends, punches, or performs any fabricating or processing operation designed to prepare steel for final use or assembly is not a steel distributor with respect to such sale. The term "steel distributor" excludes any person who purchases steel products for resale but does not take physical delivery of the material into his own stock at a location regularly maintained for such purpose.

A steel distributor is recorded as "affiliated" with a steel producer wherever either company holds, directly or indirectly, 10 percent or more of the voting stock of the other.[6] As only shipments actually terminated at warehouses are reported to NPA as shipments to distributors, the tonnages are significantly smaller for some market classifications than the corresponding data published by the American Iron and Steel Institute. A notable instance is oil country goods, for which shipments of all grades of steel to distributors during the first 9 months of 1950 are reported as 242,632 tons by NPA and 1,257,968 tons by AISI.

Coverage is very high. For example, only 10 of 240 producers of steel-mill products canvassed failed to report for the base period and for June 1951, 257 companies reported for July 1951, 267 for August, and 292 for September.[7] In contrast, the AISI report for the base period covers only 130 companies but these accounted for 98.1 percent of the tonnage of steel products shipped by producers located in the United States.

Distribution of cold-rolled and hot-rolled steel bars, strip, and sheet

Data on the distribution of cold-rolled and hot-rolled steel bars, strip, and sheet are those reported on Form 16 and published monthly by the American Iron and Steel Institute. The output of virtually the entire steel industry is covered by these reports.

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[6] "For the purpose of this report the corporation shall be regarded as a parent of another corporation and such other corporation shall be regarded as a subsidiary, if the parent corporation owns 10 percent or more of the voting stock of the subsidiary corporation, either directly or indirectly. All stock owned by any subsidiary shall be regarded as indirectly owned by the parent corporation. Parent and subsidiaries shall be regarded as affiliates and all subsidiaries of the same parent corporation as defined above shall be regarded as affiliates of one another" (NPA Form 17 instruction sheet).

[7] Increases in the number of steel producers reporting to NPA is traceable in great part, if not entirely, to more complete coverage of the industry, rather than to the appearance of new producers. The firms that did not report for the base period but which reported later account for a very small fraction of the industry's output.

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